



# ASRS Program Briefing

June 2014

**AVIATION SAFETY  
REPORTING SYSTEM**



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# ASRS Program Overview



# Concept & Mission

The Aviation Safety Reporting System (ASRS) receives, processes and analyzes voluntarily submitted incident reports from pilots, air traffic controllers, dispatchers, cabin crew, maintenance technicians, and others. Reports submitted to ASRS may describe both unsafe occurrences and hazardous situations. Information is gathered from these reports and disseminated to stakeholders. ASRS's particular concern is the quality of human performance in the National Airspace System.

## Reporting Incentives

- Voluntary
- Confidential
- Non-punitive



# Purpose

- **Identify deficiencies and discrepancies in the National Airspace System**
  - Objective: Improve the current aviation system
- **Provide data for planning and improvements to the future National Airspace System**
  - Objective: Enhance the basis for human factors research & recommendations for future aviation procedures, operations, facilities, and equipment



# ASRS Background

- WW II** Industry and Military recognized value of voluntary incident reporting
- 1958** Need for U.S. Incident Data System raised during FAA Enactment Hearings
- Oct. 1974** United Airlines incident foreshadowed TWA 514 Accident
- Dec. 1974** TWA 514 Accident
- Apr. 1975** Study of the National Air Transportation System as a Result of the Secretary's Task Force on the FAA Safety Mission
- May 1975** Aviation Safety Reporting Program (ASRP) Implemented (FAA)
- May 9, 1975** Advisory Circular 00-46 Issued
- Apr. 1976** Aviation Safety Reporting System (ASRS) Established (NASA/FAA)



# ASRS Staff

The ASRS Staff is composed of highly experienced pilots, air traffic controllers and mechanics, as well as a management team that possess aviation and human factors experience. ASRS Analysts' experience is comprised of over 470 cumulative years of aviation expertise covering the full spectrum of aviation activity: air carrier, corporate, military, and general aviation; Air Traffic Control in Towers, TRACONs, Centers, and Military Facilities. Analyst cumulative flight time exceeds 140,000 hours in over 50 different aircraft.

In addition, the ASRS Staff has human factors and psychology research experience in areas such as crew resource management, training, fatigue, user interface design, usability evaluations, and research methodology.



# Documents Governing ASRS Immunity & Confidentiality

- Federal Register Notice, 1975 & 1976
- Federal Aviation Regulations Part 91.25  
(14 CFR 91.25)
- FAA Advisory Circular 00-46E
- FAA policy concerning Air Traffic Controllers  
regarding ASRS reporting, FAA Order JO  
7200.20



# The Immunity Concept

## Paragraph 9. c. FAA Advisory Circular No. 00-46E

**C. Enforcement Restrictions.** The FAA considers the filing of a report with NASA concerning an incident or occurrence involving a violation of 49 U.S.C. subtitle VII or the 14 CFR to be indicative of a constructive attitude. Such an attitude will tend to prevent future violations. Accordingly, although a finding of violation may be made, neither a civil penalty nor certificate suspension will be imposed if:

1. The violation was inadvertent and not deliberate;
2. The violation did not involve a criminal offense, accident, or action under 49 U.S.C. § 44709, which discloses a lack of qualification or competency, which is wholly excluded from this policy;
3. The person has not been found in any prior FAA enforcement action to have committed a violation of 49 U.S.C. subtitle VII, or any regulation promulgated there for a period of 5 years prior to the date of occurrence; and
4. The person proves that, within 10 days after the violation, or date when the person became aware or should have been aware of the violation, he or she completed and delivered or mailed a written report of the incident or occurrence to NASA.



# ASRS Stakeholders



# Report Processing



# Report Intake Overview

ASRS receives reports from pilots, air traffic controllers, cabin crew, dispatchers, maintenance technicians, and others involved in aviation operations.

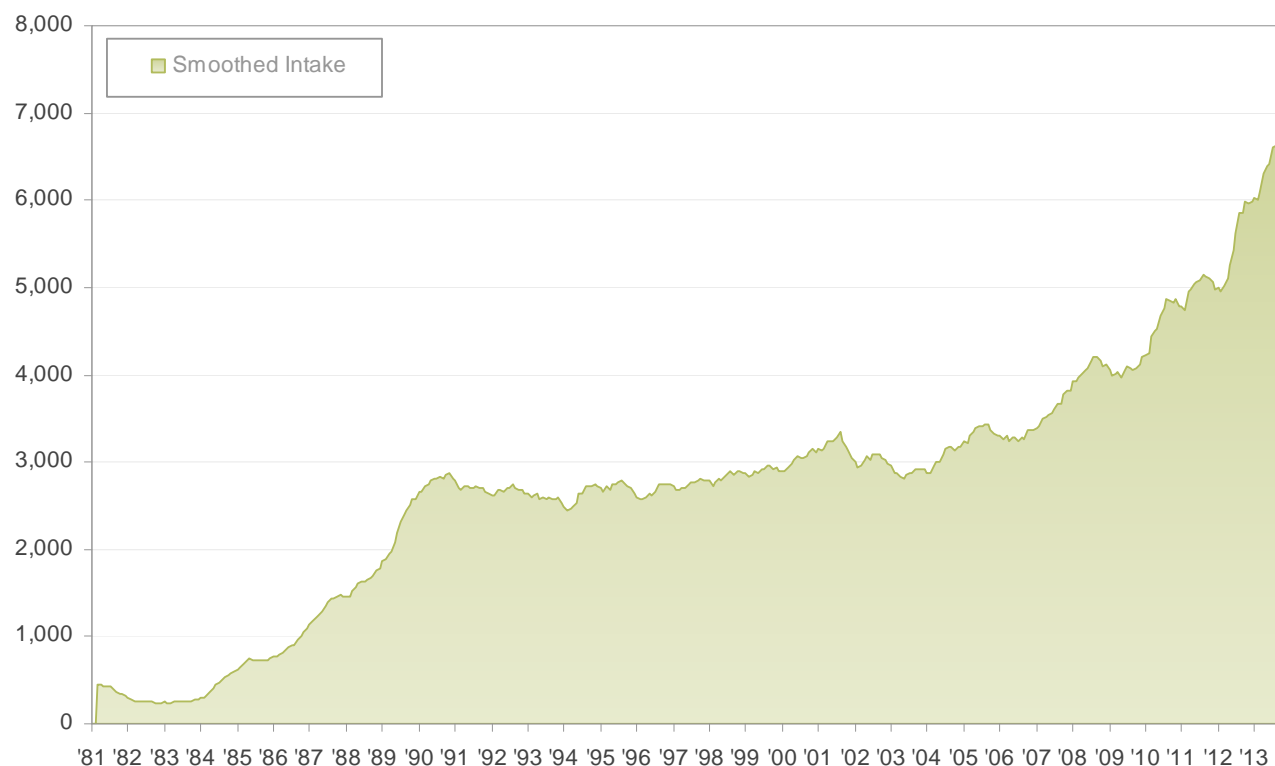
ASRS's report intake has been robust from the first days of the program, in which it averaged approximately 400 reports per month. In recent years, report intake has grown at an enormous rate. Intake now averages 1,684 reports per week and more than 6,736 reports per month.



# Report Intake Metrics

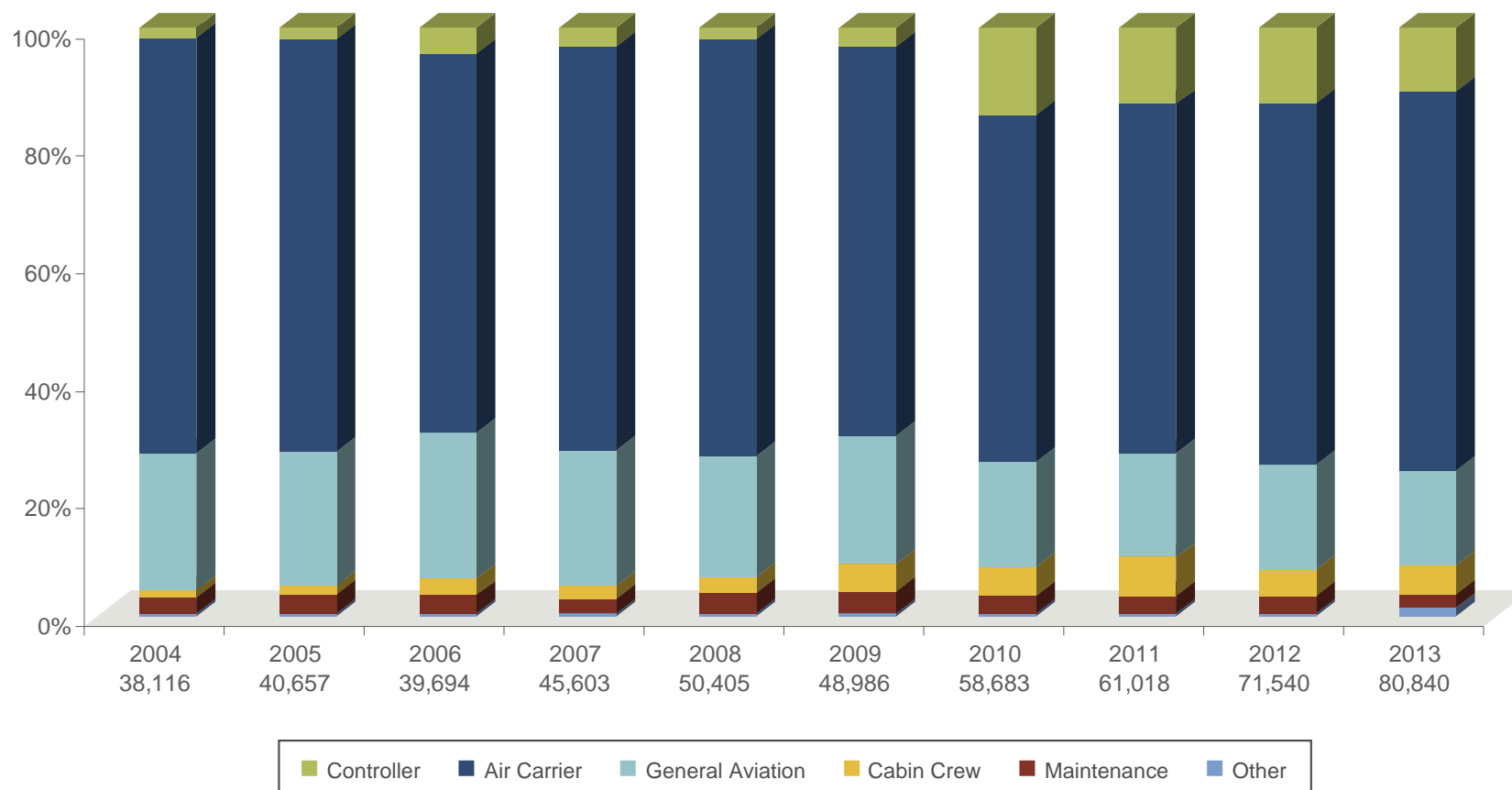
- Total Program Report Intake = **1,140,440**
- Total Report Intake for 2013 = **80,840**
- An increase of 285% since 1988
- Averaging 6,736 reports per month, 322 per working day

**Monthly Report Intake**  
(January 1981 – December 2013)



# Incident Reporter Distribution

January 2004 – December 2013



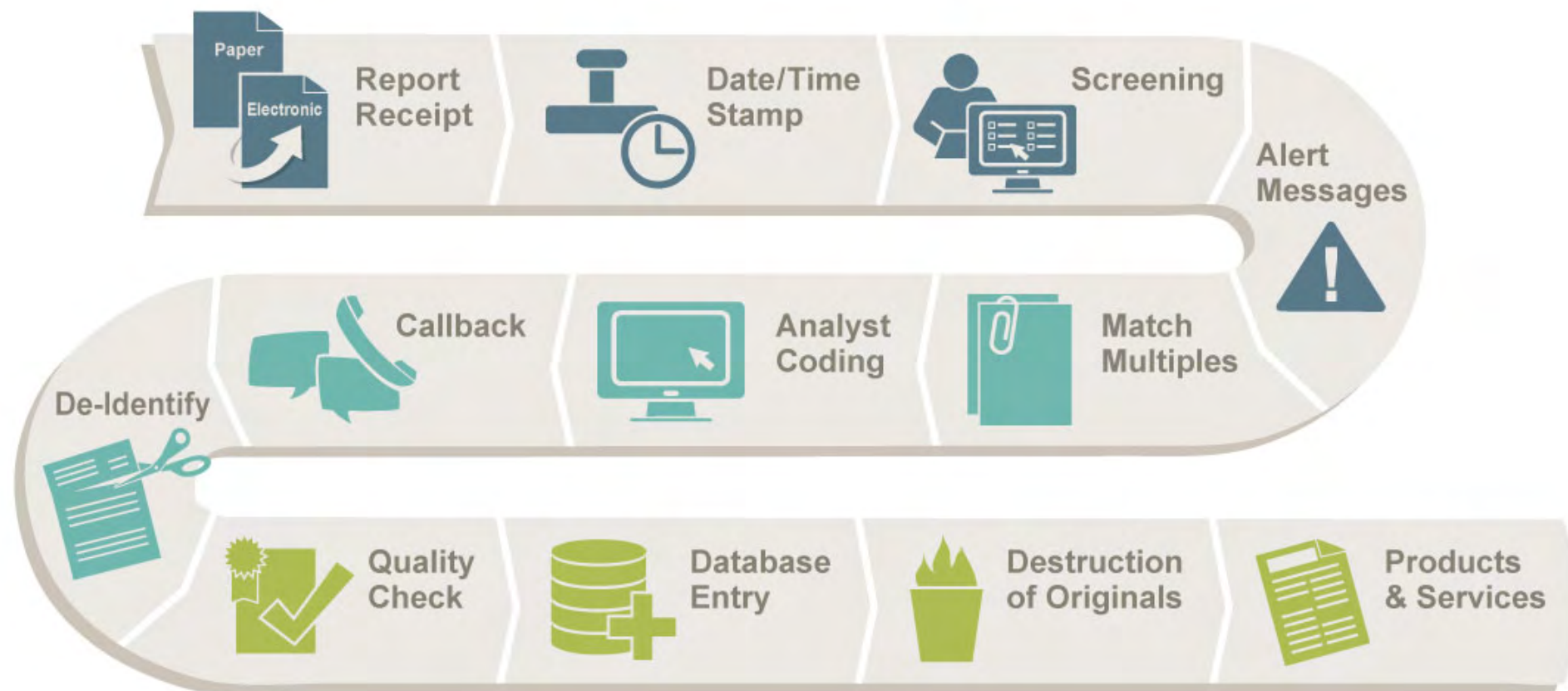
# Report Processing Overview

ASRS has securely processed over one million reports in its 38 year history. The process contains critical elements that ensure each report is handled in a manner that maintains reporter confidentiality while maximizing the ability to accurately assess the safety value of each report. ASRS report processing begins with the receipt of reports through electronic submission or from the post office, and ends with the final coded report entering the ASRS Databases.

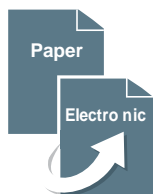
Reports sent to the ASRS are widely regarded as one of the world's largest sources of information on aviation safety and human factors.



# Report Processing Flow



# Report Processing Flow



ASRS paper reports are picked-up daily from the Moffett Field Post Office or are received electronically via website Electronic Report Submission (ERS) or ASAP data transmissions

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Every report is date and time stamped based on the date of receipt

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Two ASRS Analysts “screen” each report within three working days to provide initial categorization and to determine the triage of processing

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ASRS Analysts may identify hazardous situations from reports and issue an Alert Message. De-identified information is provided to organizations in positions of authority for further evaluation and potential corrective actions

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# Report Processing Flow



ASRS retains high-level categorization of 100% of reports received. Based on initial categorization, multiple reports on the same event are brought together to form one database “record”



ASRS Analysts identify reports that require further analysis and entry into the public ASRS database. During the detailed Report Analysis process, reports are codified using the ASRS taxonomy.



An ASRS Analyst may choose to call a reporter on the telephone to clarify any information the reporter provided. This information is added to the analysis and final record.



To ensure confidentiality all identifying data is removed. After analysis, the Identification Strip, the top portion of the report, is returned to the reporter. This ID strip acts as the reporter’s proof of submittal. All physical and electronic ID strip data with the reporter’s name, address, date and time stamp is removed.

# Report Processing Flow



All reports that receive further analysis go through a Final Check to assure coding accuracy. Quality Assurance checks are also performed for coding quality.

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Final coded reports enter the ASRS Database. These de-identified records are then available in the ASRS Database Online, which is available through the ASRS website.

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Original reports, both physical and electronic data, are destroyed to completely ensure confidentiality

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ASRS uses the information it receives to promote aviation safety through a number of products and services, such as Alert Messages, Search Requests, a monthly newsletter, focused studies and more

# ASRS Products & Services



## Alert Messages

Safety information issued to organizations in positions of authority for evaluation and possible corrective actions.



## CALLBACK

Monthly newsletter with a lessons learned format, available via website and email.



## Quick Responses

Rapid data analysis by ASRS staff on safety issues with immediate operational importance generally limited to government agencies.



## ASRS Directline

Safety topic summaries based on ASRS reports published to meet the needs of operators and flight crews.



## ASRS Database

The public ASRS Database Online and data available in Database Report Sets or Search Requests fulfilled by ASRS staff.



## Focused Studies/Research

Studies/Research conducted on safety topics of interest in cooperation with aviation organizations

# ASRS Products & Services Metrics

April 1976 – December 2013

Significant Items	Quantity
Incident Reports Received	1,140,440
Safety Alert Messages	5,880
Quick Responses	141
Search Requests	7,404
<i>CALLBACK</i> Issues	407
<i>ASRS Directline</i> Issues	10
Research Studies	64





# Alert Messages

# Alert Message Overview

When ASRS receives a report describing a hazardous situation, for example, a defective navigation aid, an aircraft system anomaly, a confusing procedure, or any other circumstance which might compromise safe flight – an alerting message is issued using de-identified information provided in the reports.

Alerting messages have a single purpose: to relay safety information to organizations in positions of authority so that they can evaluate the information and take possible corrective actions.

Alert messages are classified as **Alert Bulletins** or **For Your Information Notices**, and may be included in monthly **ASRS Safety Teleconferences**.



# ASRS Alerting Pyramid



ASRS has no direct authority to directly correct safety issues.  
It acts through and with the cooperation of others.



# Alerting Metrics

January 2004 – December 2013

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
<b>Alert Messages Issued</b>	157	79	75	63	40	30	43	50	40	44
<b>FYI Notices Issued</b>	147	129	117	279	235	206	222	151	177	129
<b>Response Rate to AB/FYI</b>	36%	32%	35%	49%	46%	38%	34%	29%	27%	28%
<b>Response Rate Non-Manufacturer</b>	82%	45%	55%	64%	55%	26%	36%	38%	25%	37%

# Alerting Subjects

January 2004 – December 2013

Subject	Total
Aircraft Systems	798
Airports Facility Status and Maintenance	454
Other	289
ATC Procedures	220
ATC Operations	129
Airport Lighting and Approach Aids	173
ATC Equipment	126
Hazards to Flight	78
Aircraft Power Plants	72
Navigation	38
Aircraft Avionics	36

# Alerting Responses

January 2004 – December 2013

Response	Percentage
Action taken as a result of the AB/FYI	24%
Action initiated before AB/FYI received	14%
Action initiated in response to AB/FYI but not completed	10%
Addressee agrees with AB/FYI but sees no problem	6%
Issue raised by AB/FYI under investigation	5%
Addressee disputes factual accuracy of AB/FYI	22%
Information in AB/FYI insufficient for action	12%
For information only, no response expected	3%
Action not within addressee's jurisdiction	2%
Addressee in factual agreement but is unable to resolve	2%

**Total  
59%**

# Examples of Safety Alerting Success

- **Similar Sounding Fix Names DEWAY - DEJAY in close proximity (FYI 2013-32)**

*The Southern California TRACON office reviewed the alert and stated they agreed "... the location and spelling of the two waypoints/fixes, DEWAY and DEJAY creates confusion and the possibility of aircraft entering the wrong fix into a FMS. Attached is a memo whereby we have requested to change the name of "DEJAY" waypoint, to eliminate this problem."*

- **SAV Runway Lighting Procedures (FYI 2013-40)**

*An FAA Southern Region, Lead Airport Certification Safety Inspector investigated the issue with SAV airport and stated "SAV airport reports that they are in the process acquiring cost estimates to reconfigure the airfield lighting circuit to operate both runway via radio controlled lighting when the Air Traffic Control Tower (ATCT) is not in operation. In the meantime, the ATCT is publishing a comment on ATIS regarding which runway is lighted at night, prior to their closure. I just completed the inspection and wrote a recommendation that they reconfigure the lighting system to operate that way. The pilot's complaint in this report was valid."*

- **FWA RNAV 23 Chart Confusion (FYI 2013-94)**

*A Jeppesen Sr. Manager of Aviation and Marine Safety responded stating "I have reviewed this and can see where the confusion may be coming into play. I have referred this to Jeppesen corporate technical standards for action."*



# Quick Responses

# Quick Response Overview

Quick Responses are rapid turnaround data analysis that are typically accomplished within two to ten business days of the request. They are a high value service directed towards safety issues with immediate operational importance. Quick Responses are generally limited to government agencies such as FAA, NTSB, NASA, and U.S. Congress.



# Recent Quick Response Applications

- An Analysis of Part 121 Similar Call Sign Related Incidents (QR339)
- An Analysis of Part 121 Flight Crew Fatigue Related Incidents (QR338)
- An Analysis of Dual Turboprop Engine Aircraft Icing Encounter Incidents (QR337)
- An Analysis of Part 121, 135 and 91 Turbojet Rejected Takeoff Related Incidents (QR336)



# ASRS Database

# ASRS Database

- Information in the ASRS Database is available publicly. The ASRS will provide **Search Requests** to government agencies, members of Congress, aviation safety organizations, and others. ASRS will search its database, download relevant reports, and send to requestor.
- Direct access to search de-identified reports in the ASRS database is now available through **ASRS Database Online** <http://asrs.arc.nasa.gov/search/database.html>
- For your convenience, selected relevant reports on several safety topics are available on the website called **ASRS Database Report Sets** <http://asrs.arc.nasa.gov/search/reportsets.html>
- The ASRS Database is also available and updated monthly through the FAA Aviation Safety Information Analysis and Sharing (ASIAS) website <http://www.asias.faa.gov/>



# ASRS Database Metrics

- Since the inception of ASRS, over 7,404 **Search Requests** (SRs) have been directly provided by ASRS Research Staff to various aviation organizations and agencies, as well as individuals through December 2013
- The activity on the ASRS website for **ASRS Database Online** is over 1,638 completed queries a month
- From the ASRS website, **ASRS Database Report Sets** are downloaded on average over 4,065 times a month, Report Sets were first posted in January 2000.



# Search Requestors by Organization

January 2004 – December 2013

Organization	Total
FAA	282
NASA	78
Air Carriers	77
Media	70
NTSB	69
Alphabet Groups	59
Miscellaneous Safety Organizations	27
Research Organizations	26
Other	24

Organization	Total
Individuals	21
Students	21
Aircraft Manufacturers	19
Foreign	12
Miscellaneous Government	11
Military	8
Law Firms	7
Educational Institutes	5
DHS	3

# Recent Search Requests Samples

- **Part 137/Agriculture Mission Related Incidents (SR 7104)**
  - Completed for the NTSB
- **Air Carrier Flight Deck Fire, Fumes, Odor or Smoke Related Incidents (SR 7131)**
  - Completed for USA Today
- **MEM Airport Reports (SR 7127)**
  - Completed for an Air Carrier introducing a new route into MEM, reports are used for pilot training purposes
- **Fusion Radar Related Incidents (SR 7143)**
  - Completed for the FAA – NCT TRACON





# *CALLBACK*

# CALLBACK Overview

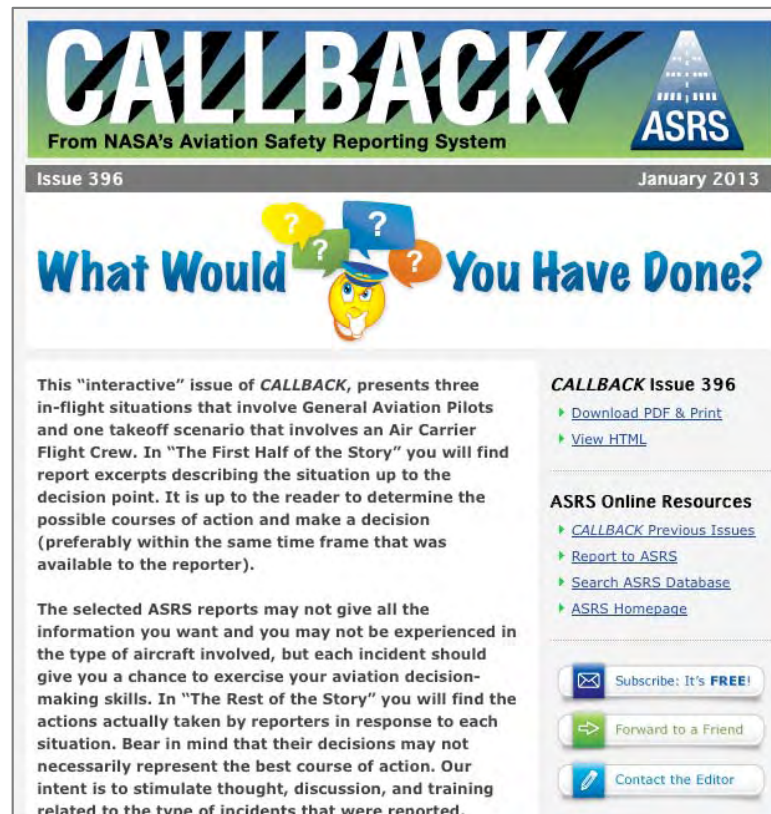
*CALLBACK*, the award winning ASRS monthly safety newsletter, has been published since 1979 in a popular “lessons learned” format. *CALLBACK* presents ASRS report excerpts that are significant, educational, and timely. Occasionally features on ASRS program developments and research are also presented. Over 407 issues have been published and distributed throughout the U.S. and to the international aviation community. All issues since December 1994 are available for download at the ASRS website at:

<http://asrs.arc.nasa.gov/publications/callback.html>



# CALLBACK Distribution and Subscription

- In addition to being published online, *CALLBACK* is distributed by email. Subscription is free and available via the ASRS website.



- The total number of email subscribers for 2013 was over 25,000
- *CALLBACK* views for 2013 (HTML and PDF) were nearly 300,000



# Aviation Community Feedback

## ■ Sample reader comments from 2013

- *“It's a good source for pilot awareness.”*
- *“I just wanted to say how much I like these, 'What would you have done' ASRS newsletters. I have been a CFI, for about 28 years and find these reports great for students.”*
- *“All your articles are of significant value and should never be treated lightly.....ever. Thank you! ”*
- *“Thanks for sending these monthly, I look forward to reading them and learn something new or am reminded of stuff I have forgotten with every issue. Your work is much appreciated.”*





# *ASRS Directline*

# ASRS Directline Overview

*ASRS Directline* is another award-winning ASRS publication. Although not currently published, this safety journal had an estimated readership of 20,000. Ten issues have been published since 1991 with an average of three to five articles per issue. All issues are available for download at the ASRS website at:

<http://asrs.arc.nasa.gov/publications/directline.html>

The feasibility of producing this publication again in the near future is being assessed.





# Focused Studies/Research

# Focused on Operations and Human Factors

- 64 Research Studies and Special Papers Published
  - **Operations:** Deviations, De-Icing/Anti-Icing, Rejected Takeoffs, Clearances, Weather Encounters, Landing Incidents, Runway Transgressions, TCAS II, Crossing Restrictions, etc.
  - **Human Factors:** Communication, Memory, Confusion, Time Pressure, Judgment, Training, Crew Performance, Flight Crew Monitoring, etc.
  - **Confidential Reporting:** ASRS Reporting Model, Case for Confidential Reporting, Development of ASRS, Cross Industry Applications, etc.
- Research agendas are developed in collaboration with government and industry safety organizations
- There are over 30 ASRS Research Papers available to download on the ASRS website

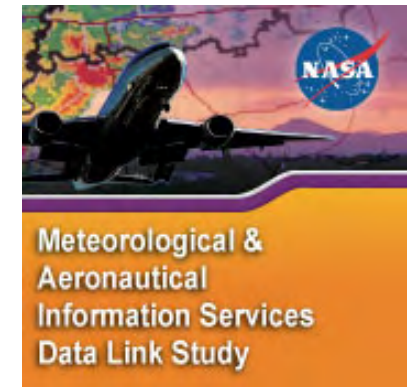


# Structured Callback: Supplemental Question Set

## Meteorological and Aeronautical Information Services Data Link Services and Applications Study

In cooperation with the FAA, ASRS is currently conducting a study focused on meteorological and aeronautical information services (AIS) via data link. ASRS is gathering reports of incidents that occurred while pilots were utilizing weather or AIS information in the cockpit (textual and/or graphical) obtained via data link (including ACARS) or other sources on the ground or in the air.

Some factors to be analyzed include type of weather data received, cockpit display utilized, software or applications used to receive meteorological information, and end user graphical interface issues. In March of 2012 an interim report was published and is now available on the ASRS website.



# Structured Callback: Supplemental Question Set

## Wake Vortex Encounter Study

In cooperation with the FAA ASRS is currently examining Wake Vortex Encounter incidents reported to ASRS. ASRS began this study in 2007 and will continue through 2015. At present the Wake Vortex Encounter Study includes all airspace within the United States, en route and terminal. In quarterly reports, the ASRS documents event dynamics and contributing factors underlying unique wake vortex encounter incidents.



A sampling of the factors to be analyzed includes reporters' assessed magnitude of wake encounter, aircraft spacing, aircraft type, runway configuration, and consequences from the encounter.





# ASRS Model Applied



# ASRS Model Applied

The ASRS model is utilized internationally in the aviation community. The International Confidential Aviation Safety Systems (ICASS) Group promotes confidential reporting systems as an effective method of enhancing flight safety in commercial air transport and general aviation operations.

International Civil Aviation Organization (ICAO) has revised Annex 13 – Accident Prevention and created Annex 19 which addresses member states establishing a voluntary incident reporting system as a Standard.

Because of the success of ASRS, there is also a growing interest in utilizing the ASRS reporting model for application to other disciplines such as medicine, railroad, maritime, security, and others.



# ASRS Model Applied to International Aviation Community

- **UNITED STATES:** Aviation Safety Reporting System (ASRS) [1976]
- **UNITED KINGDOM:** Confidential Human factors Incident Reporting Program (CHIRP) [1982]
- **CANADA:** Confidential Aviation Safety Reporting Program (CASRP) [1985], (SECURITAS) [1995]
- **AUSTRALIA:** CAIR [1988], Report Confidentially (REPCON) [2007]
- **BRAZIL:** Confidential Flight Safety Report (RCSV) [1997]
- **JAPAN:** Aviation Safety Information Network (ASI-NET) [1999]
- **FRANCE:** Confidential Events Reporting System (REC) [2000], (REX) [2011]
- **TAIWAN:** Taiwan Confidential Aviation Safety Reporting System (TACARE) [2000]
- **KOREA:** Korean Aviation voluntary Incident Reporting System (KAIRS) [2000]
- **CHINA:** Sino Confidential Aviation Safety reporting System (SCASS) [2004]
- **SINGAPORE:** Singapore Confidential Aviation Incident Reporting (SINCAIR) [2004]
- **SPAIN:** Safety Occurrence Reporting System (SNS/SRS) [2007]
- **SOUTH AFRICA:** Confidential Aviation Hazard Reporting System (CAHRS) [2013]



# ASRS Model Applied to International Aviation Community

ASRS Model Applied



# ASRS Model Applications



## Confidential Close Call Reporting System (C3RS)

A Confidential Close Call Reporting System to improve railroad safety. C3RS is a partnership between railroad carriers, railroad labor organizations, NASA, and the Federal Railroad Administration (FRA). (2010 to present)



## The National Fire Fighters Near-Miss Reporting System

The project is administered by the International Association of Fire Chiefs (IAFC) in consultation with the National Fire Fighter Near-Miss Reporting System Task Force, with the goal to improve fire fighter safety. (2005 to present)



# ASRS Summary



# ASRS Summary

ASRS is a highly successful and trusted program that has served the needs of the aviation community for over 38 years. It is available to all participants in the National Airspace System who wish to report safety incidents and situations.

The ASRS identifies system deficiencies, and issues alerting messages to persons in a position to correct them. It educates through its newsletter *CALLBACK*, its journal *ASRS Directline* and through its research studies. Its database is a public repository which serves the needs of the FAA and NASA, and those of other organizations world-wide which are engaged in research and the promotion of safe flight.



# Advantages of the ASRS Model

- System-Wide Perspective
- System-Wide Alerting
- Data Processing through Expert Analysts
- Comprehensive and Time Tested Coding Taxonomy
- Strong Immunity and Legal Provisions
- Information Sharing on Safety/Security
- National and International Reputation



# Why Confidential Reporting Works

- When organizations want to learn more about the occurrence of events, the best approach is simply to ask those involved
- People are generally willing to share their knowledge if they are assured
  - Their identities will remain protected
  - There is no disciplinary or legal consequences
- A properly constructed *confidential, voluntary, non-punitive* reporting system can be used by any person to safely share information
- Confidential reporting systems have the means to answer the question *why* - why a system failed, why a human erred
- Incident/event data are complementary to the data gathered by other monitoring systems



# Thank You

- **Contact the NASA Program Director**
  - Linda Connell – [Linda.J.Connell@nasa.gov](mailto:Linda.J.Connell@nasa.gov)
  
- **Additional Information & Resources**
  - Confidentiality & Incentives to Report  
<http://asrs.arc.nasa.gov/overview/confidentiality.html>
  - Immunity Policies  
<http://asrs.arc.nasa.gov/overview/immunity.html>
  - Requesting ASRS Data  
<http://asrs.arc.nasa.gov/search/requesting.html>

